



Configuration Audit & Root Cause Analysis August 27, 2002

Naval Sea Logistics Center



Validations vs Audits

- **Validations** -- *routinely performed*
 - Target specific configuration problem equipments
 - Fix known problem areas
- **Audits** -- *in recent years, have not been performed*
 - Give baseline for overall ship configuration health
 - Use data to identify root causes/trends of configuration discrepancies



Audit Purpose

- Measure SCLSIS program effectiveness
- Determine accuracy of data in Configuration Data Manager Database-Open Architecture (CDMD-OA)
- Identify Trends



Audit Process*

- Selection and Scheduling of Ship
 - Identifying Type 2 and Type 4 CDMD-OA Records
 - Random selection of Audit Candidates
 - Perform and Document Audit results
 - CDM assignment of Audit Discrepancy Codes
 - Perform and Report Root Cause Analysis (RCA)
- * SCLSIS Database Audit Policy & Procedures Document



RCA Analysis Strategy

- Use audit data to determine Configuration Accuracy
- Identify Supply Support and Maintenance Impacts
- Identify systemic problems
 - Source of Discrepancies
- Identify Trends
- Use analysis to improve configuration process
 - Reduce need for validations
 - Develop strategies to correct causes of discrepancy trends



Logic Flow For RCA

- Audit Team Performs Audit
- CDM Processes Audit Team Findings
- NSLC Builds Research Database
- NSLC Conducts RCA of Audit Discrepancies
- NSLC Produces RCA Report



Audit Team

- Identify Type 2 and Type 4 Records
 - Filtering out AELs, 89000 series APLs, Type 3 records, Type 2 with ISC other than "A" & "G", and Type 4 with ISC other than "D".
- Select Audit Candidates
 - Determine Sample size
 - Randomly select audit candidates
- Conduct Audit and Publish Reports



CDM Processing of Audit Results

- Assist Audit Team
 - Adjudicate and resolve audit errors or discrepancies
- Assign Audit Discrepancy Codes
 - Forward to NSLC
- Updates the CDMD-OA to Reflect Audit Findings



Audit Metric Data

- Data NSLC requires to perform Root Cause Analysis (RCA)
 - Complete Serialized list of the selected sample candidates
 - Failures (Records with HSC, RIN, RIC, EFD, Location, Failure Indicator, Ship Hull #, ESD)
 - Passes (Records)
 - Deferrals (Records)
 - Identify records as:
 - “True” Adds (Item is not in the ships configuration database)
 - “True” deletes (Item was part of ships configuration database but is no longer installed on ship)
 - “Changes” to APLs (Item in the ships configuration database but a change has been made to the item)



NSLC Database

- Load Audit Team Work File into Research Database
- Load CDM Discrepancy codes and notes into Research Database
- Identify HSC for each discrepancy
- Identify ISEA for each equipment



NSLC RCA

- Group Discrepancies Records by system, HSC, or Function
- Pull Record History data from CDMD-OA
 - New Construction Record
 - CDM made audit results add or change to CDMD-OA
- Pull CDMD-OA Record data for like ships or the APL
 - Provides Ship Class Picture for the equipment
 - Provides APL Picture



NSLC RCA (cont.)

- Check FMPMIS and OARS for equipment install information
 - Provides data on ship installs for equipments
 - Check 3-M data for maintenance or requisition actions
- Contact ISEA, NAVICP PM, PARM, PEO, TYCOM or CDM
 - Was there an ship alteration for this equipment?
 - Who installed it?
 - Was CDMD-OA workfile created for CDM?



NSLC RCA (cont.)

- Was equipment put on during new construction or availability?
- Was the equipment change the result of life cycle maintenance?
- Are there anomalies to this equipment that makes configuration difficult to maintain?
- Are the ships or TYCOMs making the equipment changes?



NSLC RCA (cont.)

- Pull CDMD-OA data on APL or HSC for the Ship
 - Record Quantities
 - Are they greater than one?
 - Record Location
 - Does it say “various”
 - 89000 APLs
 - Is the item listed on an 89000 APL?



NSLC RCA (cont.)

- Causative Analysis
 - ✓ Develop a Synopsis (Root Cause) for each Error
 - Compare all RCA data collected for cause
 - ✓ Review the Discrepancy Codes Assigned by the CDM
 - Assign new discrepancy code based on the RCA data collected and the cause
 - ✓ Develop Trends
 - Build possible Trend Scenarios for the Errors



NSLC RCA (cont.)

- Update Cumulative Trend Table
- Determine Supply Support and Maintenance Impact
 - Created Tables for APL adds and the APLs NIINs
 - Requested Mini Cosal (UIC, RIC, Qty, and AINAC)
 - Requested Inventory Quantities from FIMARS
 - Requested CASREP data for APLs adds and NIINs



NSLC RCA (cont.)

- Pull NIIN Allowance data from ACHF
- Maintenance Impact Determination
 - Number of Maintenance Actions from 3-M
- Supply Support Impact
 - Review E Records from mini Cosal and comparing any new quantities with both the ACHF and FIMARS to determine if the ship would have an additional requirement as a result of the configuration audit APL adds.
 - Review CASREP database for Mission Impact



NSLC RCA (cont.)

- Metrics Development
 - Audit Data (Part of NSLC RCA Report)
 - Record to Equipment (Passed/Failed) %
 - Equipment to Record (Passed/Failed) %
 - Deferred Records
(ESWBS/System/Commodities)
 - APL (Adds/Deletes/Updates) %
 - Discrepancy Codes (Part of NSLC RCA Report)
 - CDM
 - NSLC



NSLC RCA (cont.)

- Configuration Accuracy (Part of NSLC RCA Report)
 - Audit Results
 - Post-Root Cause Analysis
- Audit Procedural Analysis (Part of NSLC RCA Report)
 - % of data base Audited by APL
- Audit Candidates by ESWBS (Part of NSLC RCA Report)
 - APL Candidates, APL Errors, ESWBS, CDMD-OA ESWBS Population % Audited



NSLC RCA (cont.)

- Maintenance & Supply Support Impact (Part of NSLC RCA Report)
- NSLC RCA Report (Outline)
 - Audit Information (Ship/Date/Audit Team)
 - Table of Contents
 - Ship History
 - Audit Highlights
 - Audit Numbers (Configuration, Audited, Deferred, Evaluated, and failed Records)



NSLC RCA (cont.)

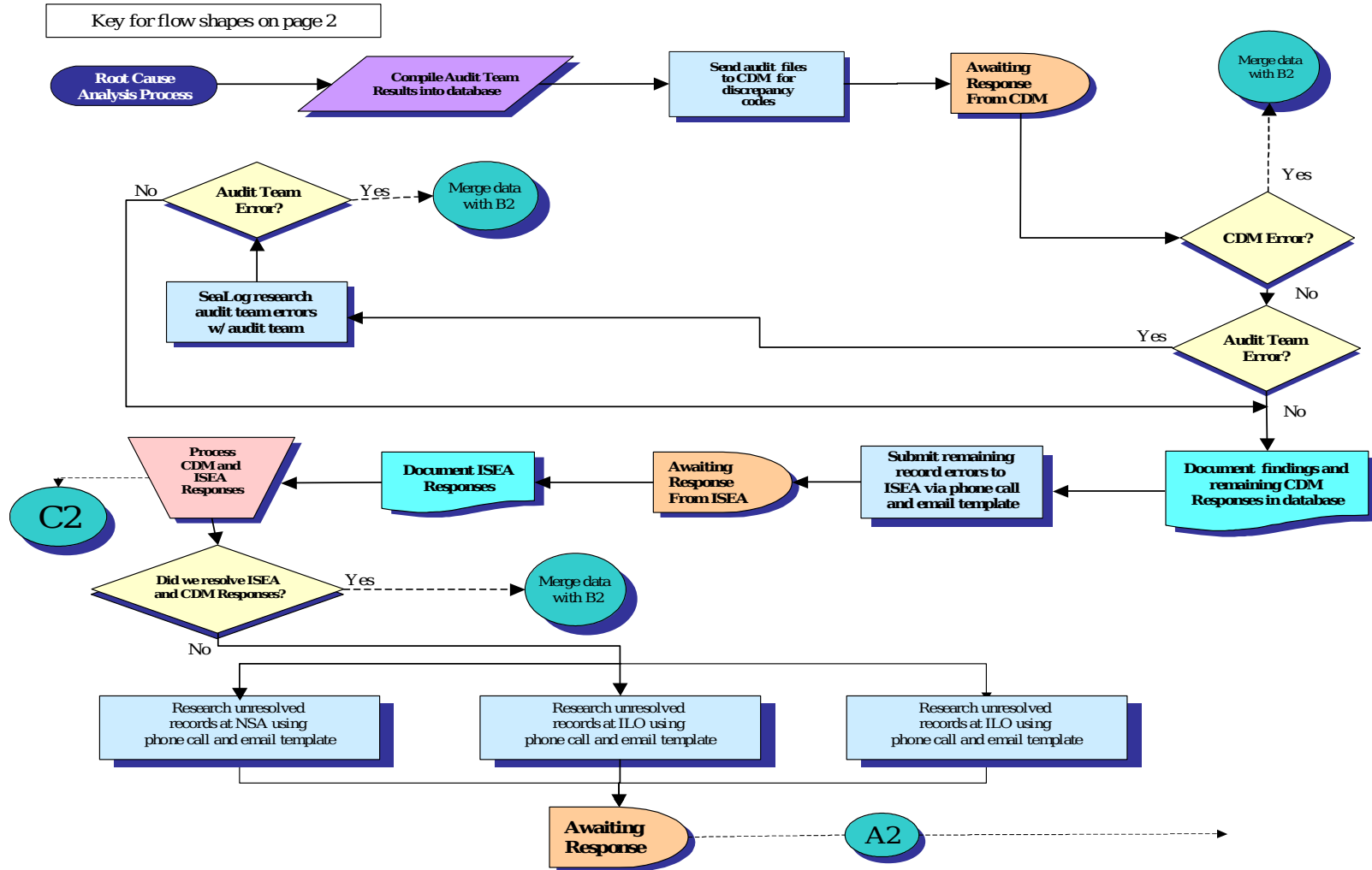
- Configuration Accuracy
- Audit Candidates Metrics (Number Adds/Deletes/Deferred Records)
- Discrepancy Codes Metrics and Charts
- Maintenance & Supply Impact Metrics
- Audit Procedural Analysis Metrics
- Trends (Ship/Cumulative)
- Recommendations



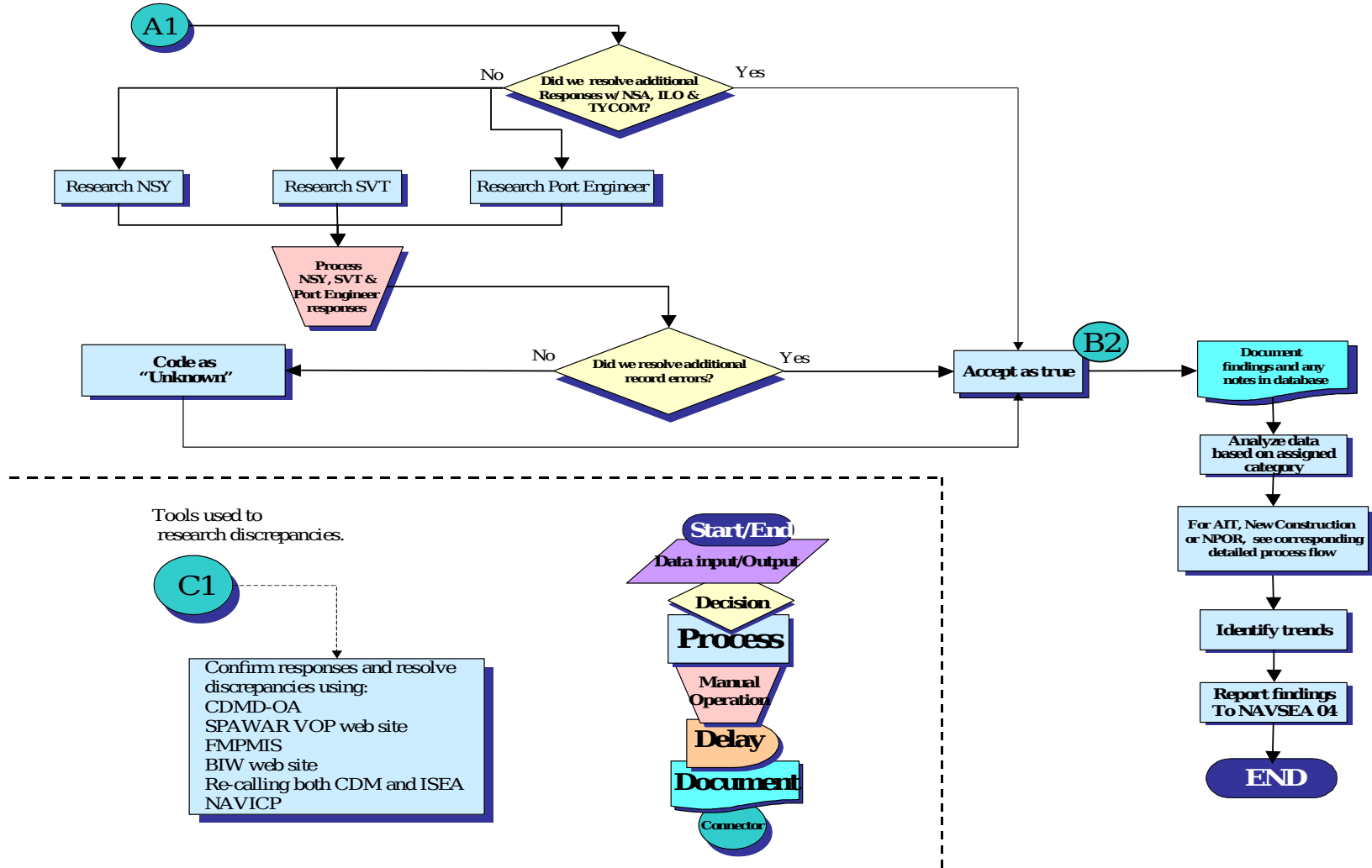
Backup Slides

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RCA Process Flow



RCA Process Flow





Audit Discrepancy Codes

A - AIT-AIT Process not followed

C - Non-Program of Record Install

D - New Construction—Incorrect APLs loaded during population time of new ship database being built.

E - CDM Non-Agree—The CDM did not concur with audit team finding.

F - CDM Error

G - Incorrect Data Provided to CDM (ISEA, ILO, NSA....)

M - Life Cycle Maintenance

U - Unable to Track—Configuration Process Gap

AIT Research Flow

